Novel Digital Image Sensing Method Permitting Transparent Sensor Material - Reflection-Induced Magnetic Footprint Amplification

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Introduction

The possibility of a transparent CMOS (or other) image sensor opens up new possibilities for optics. The mode of operation of CMOS requires the conversion of photons into electrons, precluding the possibility of one being able to eat their proverbial cake and still have it, as it were, at least using CMOS.

This is not to say, however, that an image sensor operating according to different principles could not be made to be transparent. The following is a description of that critical building block.

Abstract

The magnetic moment of a photon in mid-flight is relatively marginal, with individual photons, under most circumstances, being incapable of exerting meaningful influence upon other photons through magnetism.

Recently gained insights into the mode of action of optical reflection (something often taken for granted) suggest that light may be used in much the same way that circulating electricity is used in CMOS in a novel sensor technology that works by measuring the distortion that light may bring about it other light, that light acting as a sort of control group. By using reflection to briefly amplify the magnetic moment of incoming photons to be measured (ibid. 28 October 2023,) it should be possible to meaningfully alter photons in a control group and to indirectly use the alteration to the properties of those photons to infer the properties of the incoming photon to be measured without corrupting its properties.

A sensor node in this new design would allow light to be detected to enter (i.e. it is transparent to light moving in a single direction) while that light would be made to reflect backward from a subsequent reflective surface. It would then be reflected a second time, returning it, eventually, to its original trajectory. The photon would eventually need to continue on to subsequent layered sensors and it would be important for its property of angular momentum not to be corrupted, at least by the time it exits the sensor layer in question.

Each time the photon being detected strikes a reflective surface, whether it is a purely reflective surface or the back side of the two-way mirror formed by the outermost layer, as explained on 28 October 2023, its magnetic moment increases enormously for a brief window of time. This is the result, as was explained, of angular momentum being converted into rotational momentum, a

conversion which results in a massive increase in magnetic moment (i.e. magnetic moment in an electron or photon is governed by spin velocity.) When Coulomb forces created by alignments of electrons in multiple atom thicknesses of reflective materials trigger an inversion of direction in a photon, spin speed increases, inertia decreases and magnetic moment increases.

This increased magnetic output would be sufficient to alter the frequency of light moving in a transverse direction through this glassy pipeline toward an actual photoelectric sensor which would be deliberately dark-colored metal-oxide-based but which would be as flat as possible and turned on its side relative to the direction from which incoming light is entering to reduce the chances of incoming light being blocked but maximizing the chances of light in the control group being absorbed.

The two-way mirror material would, upon reflecting light back in its original (general) direction would, by design, alter the angular momentum of the light by a 45-degree angle to enable it to leap above the narrow reflective "bar" it struck on the way in. From here, the light would bounce off of the "ceiling" of the structure and would proceed, from there, through a short length of fiber-optic tubing which would, within a few hundred bounces, restore a linear angular momentum to the photons in question.

At this point, the photons would be free to enter translucent photonic sensors in subsequent layers with their original properties intact and with the ability to take recursive measurements of the same photons being retained at each step along the way.

Conclusion

From resolution enhancement to omni-focal capability, the development of this capability will irrevocably and radically change the SOTA. Profoundly, increasing lens/mirror size in space-based platforms will no longer be a relevant pursuit. Any needed improvement to resolution could be secured by simply creating thicker sensor-lens cylinders.